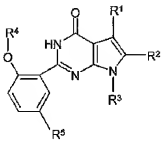


Claims:

1. (currently amended) A compound of the formula I :



wherein R¹ is H; C₁-C₄ branched or straight chain alkyl; C₁-C₄ halogenated branched or straight chain alkyl; C₂-C₆ alkenyl; C₂-C₄ alkynyl; pyridyl, pyrimidinyl, imidazolyl; except H, the above substituents may be optionally substituted with one or more following groups: halogen, cyano, nitro, hydroxyl, carboxyl, guanidino, C₁-C₄ alkyl, C₁-C₄ alkoxy, C₁-C₄ alkanoyl, C₂-C₆ cycloalkyl, substituted phenyl, CONR⁶R⁷, NR⁶R⁷, CO₂R⁸, NHSO₂R⁹ or SO₂NR⁹R¹⁰;

R² is H; C₁-C₂ branched or straight chain alkyl; C₁-C₂ halogenated branched or straight chain alkyl; C₂-C₆ alkenyl; C₂-C₄ alkynyl; substituted phenyl; except H, the above substituents may be optionally substituted with one or more following groups: halogen, cyano, nitro, hydroxyl, carboxyl, guanidino, C₁-C₄ alkyl, C₁-C₄ alkoxy, C₁-C₄ alkanoyl, C₂-C₆ cycloalkyl, CONR⁶R⁷, NR⁶R⁷, CO₂R⁸, NHSO₂R⁹ or SO₂NR⁹R¹⁰;

R³ is H; C₁-C₆ branched or straight chain alkyl which may be optionally substituted with C₂-C₆ cycloalkyl or C₁-C₄ alkoxy; C₂-C₄ alkenyl; C₂-C₄ alkynyl;

R⁴ is H; C₁-C₆ branched or straight chain alkyl which may be optionally substituted with C₂-C₆ cycloalkyl or C₁-C₄ alkoxy; C₂-C₄ alkenyl; C₂-C₄ alkynyl;

R⁵ is H; C₁-C₄ branched or straight chain alkyl which may be optionally substituted with OH, NR⁶R⁷, CN, CONR⁶R⁷ or CO₂R⁸; C₂-C₄ alkenyl which may be optionally substituted with

CN, CONR⁶R⁷ or CO₂R⁸; C₂-C₄ alkoxy optionally substituted with NR⁶R⁷; (C₂-C₂ alkoxy) C₁-C₂ branched or straight chain alkyl optionally substituted with OH or NR⁶R⁷; CONR⁶R⁷; CO₂R⁸; halogen; NR⁶R⁷; NHSO₂NR⁷; NHSO₂R⁹; SO₂NR¹⁰R¹¹; or phenyl, pyridyl, pyrimidinyl, imidazolyl, oxazolyl, thiazolyl, thienyl, or triazolyl, either of which is optionally substituted with methyl;

R⁶ and R⁷ are each independently H or C₁-C₄ branched or straight chain alkyl; or R⁶ and R⁷ together with their attached nitrogen atom form pyrrolinyl, piperidyl, morpholinyl, 4-N(R¹²)-piperazinyl or imidazolyl, either of which is optionally substituted with methyl or hydroxyl;

R⁸ is H; C₁-C₆ branched or straight chain alkyl optionally substituted with C₁-C₄ alkoxy, C₁-C₄ alkylamino, dialkylamino; substituted phenyl;

R⁹ is C₁-C₂ alkyl optionally substituted with NR⁶R⁷;

R¹⁰ and R¹¹ are each independently H or C₁-C₁₂ branched or straight chain alkyl; C₁-C₂ halogenated branched or straight chain alkyl; C₂-C₆ alkenyl; C₂-C₆ alkynyl or C₃-C₆ cycloalkyl; or R¹⁰ and R¹¹ taken together to form a pyrrolinyl, pyrrolinone group, piperidyl, morpholinyl, 4-N(R¹²)-piperazinyl, which are optionally substituted with OH, CN, CO₂R⁸; C₁-C₄ branched or straight chain alkyl, C₁-C₂ alkoxy, NR¹⁴R¹⁵ or CONR¹⁴R¹⁵; substituted phenyl, or C₁-C₆ branched or straight chain alkyl substituted with substituted phenyl, the said groups are optionally further substituted with OH, CO₂R⁸, NR¹⁴R¹⁵, CONR¹⁴R¹⁵, or linked together with another substituted phenyl by a carbonyl group;

R¹² is H; C₁-C₆ branched or straight chain alkyl which may be optionally substituted with phenyl, C₂-C₂ alkyl substituted by hydroxyl, or C₁-C₄ alkoxy; C₁-C₃ fluoroalkyl; C₂-C₆ alkenyl; C₂-C₆ alkynyl; or C₃-C₆ cycloalkyl; R¹³ is H; C₁-C₆ branched or straight chain alkyl; C₂-C₆ branched or straight chain alkyl substituted with C₁-C₃ alkoxy; C₂-C₆ branched or straight chain alkyl substituted with hydroxyl; C₂-C₆ branched or straight chain alkyl substituted with NR¹⁴R¹⁵; C₂-C₆ branched or straight chain alkyl substituted with phenyl; C₁-C₆ branched or straight chain alkyl substituted with CONR¹⁴R¹⁵ CO₂NR⁹; C₂-C₆ branched or straight chain hydrocarbyl substituted with CO₂R⁸; C₂-C₆ branched or straight chain hydrocarbyl having substituted phenyl as

substituent; CO_2R^8 ; $\text{CONR}^{14}\text{R}^{15}$; $\text{CSNR}^{14}\text{R}^{15}$ or $\text{C}(\text{NH})\text{NR}^{14}\text{R}^{15}$; $\text{C}_1\text{-C}_2$ halogenated branched or straight chain alkyl; $\text{C}_2\text{-C}_6$ alkenyl; $\text{C}_2\text{-C}_6$ alkynyl or $\text{C}_3\text{-C}_6$ cycloalkyl; or polyethylene glycol group ($n=2\text{-}20$), which is optionally substituted with $\text{C}_1\text{-C}_6$ alkyl on its terminal;

R^{14} and R^{15} are each independently H; $\text{C}_1\text{-C}_4$ branched or straight chain alkyl; $\text{C}_3\text{-C}_4$ branched or straight chain alkyl substituted with $\text{C}_1\text{-C}_2$ alkoxyl; or $\text{C}_2\text{-C}_4$ branched or straight chain alkyl substituted with hydroxyl; or R^{14} and R^{15} together with their attached nitrogen atom form a pyrrolinyl, pyrrolinone group, piperidyl or morpholinyl; and

the substituted phenyl refers to a phenyl which is substituted with one or more groups selected from $\text{C}_1\text{-C}_4$ alkoxyl, halogen, cyano, CF_3 , OCF_3 , $\text{C}_1\text{-C}_4$ branched or straight chain alkyl on the phenyl ring; or their pharmaceutically acceptable salts.

2-3. (Cancelled)

4. (Previously amended) The compound according to claim 1, wherein the compound is selected from a group consisting of:

2-[2-ethoxyl-5-(4-ethylpiperazinyl-1-sulfonyl)phenyl]-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-[2-methoxyl-5-(4-ethylpiperazinyl-1-sulfonyl)phenyl]-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, and the hydrochloride thereof;

2-[2-n-propoxy-5-(4-ethylpiperazinyl-1-sulfonyl)phenyl]-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, and the hydrochloride thereof;

2-[2-allyloxy-5-(4-ethylpiperazinyl-1-sulfonyl)phenyl]-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, and the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-[2-n-propoxy-5-(4-ethylpiperazinyl-1-sulfonyl)phenyl]-5-ethyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride

thereof;

2-[2-ethoxyl-5-(4-methylpiperazinyl-1-sulfonyl)phenyl]-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-[2-ethoxyl-5-(4-methylpiperazinyl-1-sulfonyl)phenyl]-5-ethyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-[2-ethoxyl-5-(4-ethoxycarbonylpiperazinyl-1-sulfonyl)phenyl]-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-{2-ethoxyl-5-[4-(2-hydroxyethyl)piperazinyl-1-sulfonyl]phenyl}-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-[2-ethoxyl-5-(pyrrolidinyl-1-sulfonyl)phenyl]-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-{2-ethoxyl-5-[3-(2-oxy-pyrrolidin-1-yl)-n-propylamino-N-sulfonyl]phenyl}-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-{2-ethoxyl-5-[2-(pyrrolidin-1-yl)-ethylamino-N-sulfonyl]phenyl}-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-[2-ethoxyl-5-(morpholino-4-sulfonyl)phenyl]-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-{2-ethoxyl-5-[3-(morpholin-4-yl)-n-propylamino-N-sulfonyl]phenyl}-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-{2-ethoxyl-5-[2-(morpholin-4-yl)-ethylamino-N-sulfonyl]phenyl}-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-[2-ethoxyl-5-(2,6-dimethylmorpholino-N-sulfonyl)phenyl]-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-[2-ethoxyl-5-(1-benzylpiperidyl-4-aminosulfonyl)phenyl]-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-{2-ethoxyl-5-[2-(piperidin-1-yl)ethylamino-1-sulfonyl]phenyl}-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-[2-ethoxyl-5-(4-benzylpiperazinyl-1-sulfonyl)phenyl]-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-[2-ethoxyl-5-(4-phenylpiperazinyl-1-sulfonyl)phenyl]-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-[2-ethoxyl-5-(piperazinyl-1-sulfonyl)phenyl]-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-[2-ethoxyl-5-(4-benzo[1,3]dioxol-5-yl-methylpiperazinyl-1-

sulfonyl)phenyl]-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d] pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-{2-ethoxyl-5-[4-(3-phenyl-n-propan-1-yl)piperidyl-1-sulfonyl]phenyl}-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-[2-ethoxyl-5-(n-propylamino-1-sulfonyl)phenyl]-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-{2-ethoxyl-5-[N,N-di(2-hydroxyethyl)aminosulfonyl]phenyl}-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-{2-ethoxyl-5-[N-(2-hydroxyethyl)-N-methylaminosulfonyl]phenyl}-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-{2-ethoxyl-5-[N-(2-hydroxyethyl)-N-ethylaminosulfonyl]phenyl}-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-{2-ethoxyl-5-[N-(2-hydroxyethyl)-N-n-butylaminosulfonyl]phenyl}-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-[2-ethoxyl-5-(p-ethoxylcarboxylphenylamino-N-sulfonyl)phenyl]-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-[2-ethoxyl-5-(o-benzoylphenylamino-N-sulfonyl)phenyl]-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride

and other possible hydrochloride thereof;

2-[2-ethoxyl-5-(N2-acethydrazido-N1-sulfonyl)phenyl]-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride and dihydrochloride and other possible hydrochloride thereof;

2-[2-ethoxyl-5-(2-dimethylaminoethylamino-N-sulfonyl)phenyl]-5-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-[2-ethoxyl-5-(4-ethylpiperazinyl-1-sulfonyl)phenyl]-5-ethyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-[2-ethoxyl-5-(4-ethylpiperazinyl-1-sulfonyl)phenyl]-5-morpholinomethyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof;

2-[2-ethoxyl-5-(4-ethylpiperazinyl-1-sulfonyl)phenyl]-5-(pyrimidinyl-2)-methyl-7-n-propyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof; and

2-[2-ethoxyl-5-(4-ethylpiperazinyl-1-sulfonyl)phenyl]-5-methyl-7-allyl-3,7-dihydropyrrolo[2,3-d]pyrimidin-4-one, the monohydrochloride, dihydrochloride and other possible hydrochloride thereof.

5. (canceled)

6. (currently amended) A pharmaceutical composition containing the compound according to ~~any one of claims 1 or 4~~ 1-4 as an active ingredient and a pharmaceutically acceptable excipient.

7. (currently amended) A veterinary drug composition containing the compound according to ~~any one of claims 1 or 4~~ 1-4 as an active ingredient and a veterinarily acceptable excipient.

8-9. (canceled)

10. (currently amended) Intermediates for the manufacture of compound of formula I according to claim 1:

